

## Remarks

In the present response, claims 1-32 are presented for examination.

### **Claim Rejections: 35 USC § 103(a)**

Claims 1-4, 6, 13-17, 19, and 26-32 are rejected under 35 USC § 103(a) as being unpatentable over USPN 2005/0038968 (Iwamura) in view of USPN 2002/0083281 (Carteau). Applicants respectfully traverse these rejections.

The claims recite various elements that are not taught or suggested in Iwamura in view of Carteau. Some examples for the independent claims are provided below. As a precursor to a discussion of the claims, however, an overview of Iwamura and Carteau is provided.

Iwamura uses logs stored in a log storage area to perform a rollback for database recovery ([0257]). The logs and rollback are based on time: “Accordingly, when the database is recovered, the host 110 starts the recovery processing from the log at this time” ([0235]). Iwamura does mention an alternative embodiment wherein a sequential ID is used: “Here, the case of the ID has a feature that if a rule is set such that continuous numbers are previously assigned, a missing number can be recognized” ([0236]).

**Iwamura does not teach or suggest using acknowledgements as part of his rollback process for database recovery.**

Carteau teaches a computer coupled to a disk subsystem having two controllers. The controllers are coupled to plural disk drives. After a controller receives a write request from a host, the controller writes the request to a disk and transmits the request to the second controller. The second controller sends an acknowledgement to the first controller which then acknowledges the write to the host. **Carteau does not teach or suggest using these acknowledgements as part of a process for database recovery.**

### **Claim 1**

As one example, claim 1 recites “comparing acknowledgements and sequence numbers in the first sidefile with acknowledgements and sequence numbers in the second sidefile.” In other words, **claim 1 recites comparing both acknowledgments and sequence numbers in one sidefile with acknowledgements and sequence numbers in**

**a second sidefile.** This comparison of both acknowledgements and sequence numbers is used to update writes stored at the second remote storage entity.

As noted above, Iwamura uses logs based on time and mentions the use of continuous numbers as an alternative. Iwamura, though, never teaches or suggests comparing both acknowledgements and sequence numbers in one sidefile with acknowledgements and sequence numbers in a second sidefile as recited in claim 1. Carteau discusses transmitting acknowledges, but never teaches or suggests comparing both acknowledgements and sequence numbers in one sidefile with acknowledgements and sequence numbers in a second sidefile as recited in claim 1.

For at least these reasons, claim 1 and its dependent claims are allowable over Iwamura.

### Claim 13

As one example, claim 13 recites comparing both “acknowledgements and sequence numbers in the first and second sidefiles.” As noted above, Iwamura uses logs based on time and mentions the use of continuous numbers as an alternative. Iwamura, though, never teaches or suggests comparing both acknowledgements and sequence numbers as recited in claim 13. Carteau discusses transmitting acknowledges, but never teaches or suggests comparing both acknowledgements and sequence numbers as recited in claim 13.

For at least these reasons, claim 13 and its dependent claims are allowable over Iwamura.

### Claims 28 and 29

By way of example, claims 28 and 29 recite “comparing both acknowledgements and sequence numbers at the first remote storage entity to determine whether to update writes stored at the second remote storage entity after a failure of the primary storage entity.” As noted above, Iwamura uses logs based on time and mentions the use of continuous numbers as an alternative. Iwamura, though, never teaches or suggests comparing both acknowledgements and sequence numbers as recited in claims 28 and 29.

Carteau discusses transmitting acknowledges, but never teaches or suggests comparing both acknowledgements and sequence numbers as recited in claims 28 and 29.

For at least these reasons, claims 28 and 29 and their dependent claims are allowable over Iwamura.

#### Claim 30

By way of example, claim 30 recites “comparing (1) the writes acknowledged to have been received and (2) sequence numbers assigned to the writes to determine data content at the second remote storage entity.” As noted above, Iwamura uses logs based on time and mentions the use of continuous numbers as an alternative. Iwamura, though, never teaches or suggests comparing both acknowledgements and sequence numbers as recited in claim 30. Carteau discusses transmitting acknowledgements but never teaches or suggests comparing both acknowledgements and sequence numbers as recited in claim 30

For at least these reasons, claim 30 is allowable over Iwamura.

#### Claim 31

By way of example, claim 31 recites a processor that is operable to “compare both acknowledgements and sequence numbers at the first remote storage entity to determine whether to update writes stored at the second remote storage entity after a failure of the primary storage entity.” As noted above, Iwamura uses logs based on time and mentions the use of continuous numbers as an alternative. Iwamura, though, never teaches or suggests comparing both acknowledgements and sequence numbers as recited in claim 31. Carteau discusses transmitting acknowledges, but never teaches or suggests comparing both acknowledgements and sequence numbers as recited in claim 31.

For at least these reasons, claim 31 is allowable over Iwamura.

#### Claim 32

As one example, claim 32 recites that the first sidefile includes both sequence numbers and acknowledgements. The second sidefile also includes sequence numbers. A comparison means compares the first and second sidefiles. As noted above, Iwamura uses

logs based on time and mentions the use of continuous numbers as an alternative. Iwamura, though, never teaches or suggests comparing both acknowledgements and sequence numbers as recited in claim 32. Carteau mentions acknowledgements but does not teach or suggest comparing both acknowledgements and sequence numbers as recited in claim 32.

For at least these reasons, claim 32 is allowable over Iwamura.

**Claim Rejections: 35 USC § 103(a)**

Claims 5 and 18 are rejected under 35 USC § 103(a) as being unpatentable over Iwamura in view of Carteau and USPN 6,912,483 (Frederick). As noted above, Iwamura and Carteau do not teach or suggest all the elements of independent claims 1 and 13. Frederick does not cure the deficiencies of Iwamura and Carteau. For at least these reasons, claims 5 and 18 are allowable over Iwamura, Carteau, and Frederick.

**Claim Rejections: 35 USC § 103(a)**

Claims 7-9 and 20-22 are rejected under 35 USC § 103(a) as being unpatentable over Iwamura in view of Carteau and USPN 6,260,125 (McDowell). As noted above, Iwamura and Carteau do not teach or suggest all the elements of independent claims 1 and 13. McDowell does not cure the deficiencies of Iwamura and Carteau. For at least these reasons, claims 7-9 and 20-22 are allowable over Iwamura, Carteau, and McDowell.

**Claim Rejections: 35 USC § 103(a)**

Claims 10-12 and 23-25 are rejected under 35 USC § 103(a) as being unpatentable over Iwamura in view of Carteau and USPN 6,098,179 (Harter). As noted above, Iwamura and Carteau do not teach or suggest all the elements of independent claims 1 and 13. Harter does not cure the deficiencies of Iwamura and Carteau. For at least these reasons, claims 10-12 and 23-25 are allowable over Iwamura, Carteau, and Harter.

## **CONCLUSION**

In view of the above, Applicants believe that all pending claims are in condition for allowance. Allowance of these claims is respectfully requested.

Any inquiry regarding this Amendment and Response should be directed to Philip S. Lyren at Telephone No. 832-236-5529. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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